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Scientists Promoting Awareness of Research Careers (SPARC)

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Abstract:

Scientists Promoting Awareness in Research Careers, S.P.A.R.C., is an outreach program designed to ‘sparc’ a passion for science in high school students. SPARC was generated out of the awareness for a need in inspiring the next generation of scientists and researchers. STEM careers are a constantly growing field with high job prospects and great impacts on society. Additionally, SPARC aimed to work with local partners to increase involvement in science by underrepresented populations in the Eastern Iowa area. An event day was scheduled which consisted of lab tours, guest speakers, and a hands-on wet labs for the students to explore different areas of science.

Goals:

1) Expose High School Students to Science and Future Careers
2) Demonstrate Innovative Techniques and Stimulate Creative Thinking
3) Network With Community Partners
4) Showcase Research Happening on Campus

Target Audience and Partnerships:

We aimed to target high school students through the TRIO UpwardBound program. These students are from underrepresented minorities. We wanted to partner with UpwardBound for their experience with these students and populations. We also sought external funding from the University of Iowa Community Credit Union (UICCU) to help with the operation costs.
Lab Tours:
Many of our students began their experience with SPARC by touring a number of research labs and sites at the Biology Buildings. Among these were the Slusarski lab where they learned about zebrafish and how they can model human diseases, the Neiman lab where evolution was discussed and how modern science (and snails!) can show lineages of the past, and the greenhouse where the students explored the diversity of plants with vibrant shapes, sizes and colors.

Guest Speakers:
We had undergraduate speakers present their findings and research methods from their work to the students. Emphasis was placed on the overall significance of their work as well as potential career options for science majors. Fields included: cancer biology, immunology, cardiovascular disease, diabetes, and biomedical engineering.
Experiential Labs:

In addition to the lab tours and speakers, we wanted the students to have a hands-on experience with science. To do this, we organized an ‘egg-drop’ challenge and a microscopy section.

For the egg-drop challenge, the students were tasked with designing a contraption which would prevent an egg from cracking when it hit the ground. The catch was that the egg would be dropped from 4-stories up at the top of the Biology Building East. Using assorted supplies and ingenuity the students created their contraptions which were subsequently tossed off the roof. Amazingly the students’ designs saved most of the eggs! They used a variety of parachutes and bumpers to prevent the eggs from cracking.

In the microscopy section, the students viewed a number of living organisms and samples under high magnification. Among the specimens were fruit flies, zebrafish larvae at different stages of development, C. elegans nematodes, histologic sections of different organs, fungal specimens, and bacteria. The samples spanned nearly the entire tree-of-life! The students were able to conduct their own Gram stains to differentiate species of bacteria. They also had the chance to hypothesize why the fungi had different structures, and how this related to their lifestyles.
Impact:

The students’ reactions were priceless. After a long morning of touring the University with UpwardBound, many of them were exhausted when they showed up for the SPARC event. However, by the end they were all talkative and excited about what they had seen. Below are some inspiring and humorous quotes from the awesome students.

“Wait… flies have brains?!”

“Oh my god! You can see the heart beating [in the zebrafish]!”

“Yes our egg gt caught in a tree… but it didn’t break… so we technically succeeded.”
**Future Directions:**

Beyond the main event, SPARC wants to strengthen partnerships with UpwardBound, as well as other area organizations to provide similar opportunities to other students.

SPARC aims to provide advice on how this event could be altered for use by the Biology Department in recruitment and outreach events.

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